

IN THE CLAIMS

The following is a current listing of all the claims. This listing replaces all earlier amendments and listings of the claims, and follows the new format authorized by the U.S. Patent and Trademark Office (USPTO) as of December 2002.

Cancel Claims ~~3-22~~, ~~27-39~~, and ~~41-46~~ without prejudice and without disclaimer of subject matter.

Please amend Claims 23-25 and 40, and add new Claims 47-54, to read as shown below.

1. (Original) An image formation apparatus comprising, within an enclosure configured by a pair of substrates placed face to face and an external frame placed between said substrates:

an electron source placed on one of said pair of substrates;

an image formation material placed on the other substrate; and

spacers placed between said substrates,

wherein said spacers and said external frame are conductive, and means for electrically connecting said spacers and said external frame is provided so that the equipotential surfaces between said spacers and said external frame are quasi-parallel when the apparatus is driven.

2. (Original) An image formation apparatus comprising, within an enclosure configured by a pair of substrates placed face to face and an external frame placed between said substrates:

an electron source placed on one of said pair of substrates;

an image formation material placed on the other substrate; and

spacers placed between said substrates,

wherein said spacers and external frame are conductive, a quasi-equal potential V1 is applied to the top end of said spacers and the top end of said external frame when the apparatus is driven and a quasi-equal potential V2, which is different from the potential V1 is applied to the bottom end of said spacers and the bottom end of said external frame.

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Claims 3-22 (cancelled).

23. (Currently Amended) An image formation apparatus comprising:
a first substrate on which a plurality of wires connecting electron emission devices are provided;

a second substrate on which an image formation material for forming images by radiation of electrons emitted from the electron emission devices is provided; and

a plurality of spacers placed between said first and second substrates,
wherein each spacer is placed on a corresponding one of the plurality of wires,

wherein said plurality of wires include wires on which the spacers are placed and wires on which no spacers are placed, and spacers are placed on the wires discretely so that the a number of wires on which no spacers are placed between said neighboring spacers falls within the range of 5 to 50.

24. (Currently Amended) The image formation apparatus according to claim 23, wherein an enclosure is configured by the said first and second substrates and an external frame placed between said first and second substrates, and ~~the~~ a ratio (A/S) of an internal area A of the enclosure on a cross section horizontal to one of said first and second substrates to a total cross-sectional area S of said plurality of spacers, ~~that is A/S,~~ is within a range of 0.018% to 7.8%.

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25. (Currently Amended) The image formation apparatus according to claim 23, wherein an enclosure is configured by said first and second substrates and an external frame placed between said first and second substrates, and ~~the~~ a ratio (W/T) of width W to thickness T of said external frame, ~~that is, W/T,~~ is within a range of 1.5 to 30.

26. (Original) An image formation apparatus comprising, within an enclosure configured by a pair of substrates placed face to face and an external frame placed between said substrates:

an electron source; and

an image formation material for forming images by radiation of electrons emitted from said electron source,

wherein said external frame is formed by means of die punching.

Claims 27-39 (cancelled).

40. (Currently Amended) An image formation apparatus comprising:

a. an electron source substrate comprising a first substrate, an array of electrode pairs on the first substrate configured by pairs of device electrodes placed along a plurality of rows and a plurality of columns, an electron source placed between said pair of electrodes, a plurality of column wires on the first substrate made up of column wires commonly connecting one of each electrode pair on the column provided for each electrode pair on each column, and a plurality of row wires on the substrate commonly connecting the other of each electrode pair on the row, which are insulated from the column wires ~~and wider than said column wires~~, provided for each electrode pair on each row;

b. an image formation substrate comprising a second substrate and an image formation material placed on the second substrate; and

c. spacers inserted between the electron source substrate and said image formation substrate and placed on the row wires,

wherein each row wire has a width larger than that of an individual one of the column wires.

Claims 41-46 (cancelled).

47. (New) An apparatus according to claim 40, wherein an enclosure is configured by said first and second substrates and an external frame placed between said first and second substrates, and a ratio (A/S) of internal area A of the enclosure on a cross section horizontal to one of said first and second substrates to a total cross-sectional area S of said plurality of spacers, is within a range of 0.018% to 7.8%.

48. (New) An apparatus according to claim 40, wherein an enclosure is configured by said first and second substrates and an external frame placed between said first and second substrates, and a ratio (W/T) of width W to thickness T of said external frame is within a range of 1.5 to 30.

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49. (New) An image formation apparatus comprising:

a first substrate on which a plurality of electron emission devices and a plurality of row directional wires and column directional wires are provided, wherein the plurality of electron emission devices are wired in a matrix formation using the plurality of row directional wires and column directional wires;

a second substrate on which an image formation material for forming images by radiation of electrons emitted from the electron emission devices is provided; and

a plurality of spacers placed between said first and second substrates,

wherein said plurality of row directional wires include wires on which the spacers are placed and wires on which no spacers are placed, and a number of row directional wires on which no spacers are placed between neighboring spacers falls within the range of 5 to 50.

50. (New) An apparatus according to claim 49, wherein an enclosure is configured by said first and second substrates and an external frame placed between said first and second substrates, and a ratio (A/S) of an internal area A of the enclosure on a cross section horizontal to one of said first and second substrates to a total cross-sectional area S of said plurality of spacers, is within a range of 0.018% to 7.8%.

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51. (New) An apparatus according to claim 49, wherein an enclosure is configured by said first and second substrates and an external frame placed between said first and second substrates, and a ratio (W/T) of a width W to a thickness T of said external frame is within a range of 1.5 to 30.

52. (New) An image formation apparatus comprising:
a first substrate on which a plurality of electron emission devices and a plurality of row directional wires and column directional wires are provided, wherein the plurality of electron emission devices are wired in a matrix formation using the plurality of row directional wires and column directional wires;

a second substrate on which an image formation material for forming images by radiation of electrons emitted from the electron emission devices is provided; and
a plurality of spacers placed between said first and second substrates,
wherein each row directional wire has a width larger than that of an individual one of the column directional wires.

53. (New) An apparatus according to claim 52, wherein an enclosure is configured by said first and second substrates and an external frame placed between said first and second substrates, and a ratio (A/S) of an internal area A of the enclosure on a cross section horizontal to one of said first and second substrates to a total cross-sectional area S of said plurality of spacers, is within a range of 0.018% to 7.8%.

54. (New) An apparatus according to claim 52, wherein an enclosure is configured by said first and second substrates and an external frame placed between said first and second substrates, and a ratio (W/T) of width W to thickness T of said external frame is within a range of 1.5 to 30.